Cheng Sitong

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https://cmots.github.io

EDUCATION

The Chinese University of Hong Kong 09/2021-11/2022

- Master of Science in Computer Science (*with distinction*)

Beijing University of Posts and Telecommunications 09/2017-07/2021

- Bachelor of Science with Honors, *First Class*
- Major: Internet of Things Engineering
- It is a joint program with Queen Mary University of London and taught entirely in English.

RESEARCH EXPERIENCE

Real-time Privacy-preserving Drowning Detection 11/2022-present

- Designed experiments using affordable scanning sonars to detect drowning in swimming pools and conducted on-site experiments.
- Developed data processing pipelines and applied deep learning models for real-time swimmer status monitoring. Currently collaborating with MTR to deploy a real-time demo and achieved good results.
- Proposed a novel scanning strategy that skips rotation angles and reconstructs skipped areas to increase scanning range under sound speed limitations.

Machine Learning Technologies for Advancing Digital Biomarkers for Alzheimer's Disease 06/2022-12/2022

- Assembled and installed hardware based on Raspberry Pi and Arduino to collect data of Alzheimer's disease.
- Implemented data preprocessing scripts to clean, standardize, and temporally align multi-source time series data from different sensors.
- Determined the biomarker set to classify AD/MCI/normal based on used sensors, including ToF camera, audio recorder, mmWave radar, etc.

ASR-Free Pronunciation Assessment 12/2019-05/2020

- Investigated an ASR (automatic speech recognition)-free scoring approach that is derived from the marginal distribution of raw speech signals.
- Responsible for programming, data collection and visualization, etc.

CN-Celeb: A Challenging Chinese Speaker Recognition Dataset 06/2019-05/2020

- Collected audio data of 1,000 Chinese celebrities and created a benchmark database for Kaldi.
- Responsible for developing with deep learning frameworks, maintaining Python environment, writing crawler scripts, implementing speaker diarization model UIS-RNN, etc.

WORK EXPERIENCE

Honorary Research Assistant in AIoT Lab, The Chinese University of Hong Kong 08/2022 – present

- Led the project of Drowning Detection and develop the prototype product.
- Attending a project to use machine learning to predict Alzheimer's disease based on multimodality data.

Fulltime Intern with Intelligent Multimedia Group, Microsoft Research Asia, Beijing 02/2021-04/2021

- Implemented several SOTA models of keyword spotting and determined a baseline.
- Developed a pipeline to extract keywords from existing speech database.

PUBLICATIONS

- [Interspeech'20] Cheng, S., Liu, Z., Li, L., Tang, Z., Wang, D., Zheng, T.F. (2020) ASR-Free Pronunciation Assessment. Proc. Interspeech 2020, 3047-3051, DOI: 10.21437/Interspeech.2020-2623.
- [MobiSys'23] Xiaomin Ouyang, et al. Harmony: Heterogeneous Multi-Modal Federated Learning through Disentangled Model Training. In Proceedings of the 21st Annual International Conference on Mobile Systems, Applications and Services. https://doi.org/10.1145/3581791.3596844
- [ICASSP'20] Y. Fan et al., "CN-Celeb: A Challenging Chinese Speaker Recognition Dataset," ICASSP 2020 - 2020 IEEE International Conference on Acoustics, Speech and Signal Processing. pp. 7604-7608